The New Hampshire Climate Change Policy Task Force

New Hampshire Climate Action Plan

A Plan for New Hampshire's Energy, Environmental and Economic Development Future

Appendix 4.6: Reduce Vehicle-Miles Traveled Through an Integrated Multi-Modal Transportation System

Prepared by the
NH Department of Environmental Services
March 2009

Table of Contents

Recommended Actions

TLU Action 2.B.1.b – Improve Existing Local/Intra-Regional Transit (Bus) Service

Summary

Improve local bus service within New Hampshire on *existing* routes by providing more frequent service, better passenger amenities and facilities, and increased marketing to expand ridership. This action would 1) increase the frequency of service on *existing routes* to reduce wait times and provide greater flexibility for passenger travel; 2) provide additional passenger amenities; and 3) expand marketing and provide easier access to schedules and service information to attract additional ridership.

Program Description

1. Mechanism (*i.e., how the policy or program achieves the desired result*): New Hampshire's existing 11 local bus systems have experienced significant growth in ridership over the last 3 to 5 years. Increases in the price of fuel and individual vehicle operation, together with strategic improvements in existing service, have contributed to the rise in ridership. This action would 1) increase the frequency of service on *existing routes* to reduce wait times and provide greater flexibility for passenger travel; 2) provide additional passenger amenities; and 3) expand marketing and provide easier access to schedules and service information to attract additional ridership. (*Note*: Adding new routes to expand the area served by local transit is covered separately under Action 2.B.1.a.) Expanded availability and use of local transit is essential to reducing total vehicle miles traveled and reliance on single-occupancy vehicles.

2. Implementation Plan (*i.e., how to implement the specific policy or program*):
    a. *Method of Establishment (e.g., legislation, executive order):*

        Local transit providers would assume the lead on identifying and implementing service improvements likely to increase ridership most significantly. Assistance and grant funding could be coordinated by the Metropolitan Planning Organizations (MPOs) or Regional Planning Commissions (RPCs), together with NHDOT. Legislative action is likely required to provide for increased funding and technical assistance to identify and implement appropriate actions.

    b. *Resources Required:*
        - MPO (or RPC) and NHDOT staff time (will require additional staff to coordinate assistance program).
        - Funding (local/state match for Federal $) for studies required to identify appropriate improvements.
        - Initial and on-going capital investment for additional buses to expand services and bus stop amenities (e.g., benches, shelters, signage).
        - Operating subsidy and marketing expenses
        - Some portion of the funding could be Federal, although local/state match is required. Local match could be generated from a local vehicle registration fee (e.g., $5 per vehicle for 11-town Greater Derry Greater Salem region would generate approximately $700,000 per year (Salem-Derry 2003)).

    c. *Barriers to Address (especially for medium to low feasibility actions):* Requires significant public investment and potential operating subsidy in the near term.

3. Parties Affected by Implementation *(i.e., residents, businesses, municipalities, etc.):*
    a. *Parties Responsible for Implementation:* Local transit providers, with coordination by MPOs/RPCs and/or NHDOT.

b. *Parties Paying for Implementation*

A variety of funding options and combinations are currently used to support local transit systems, including local governments, passengers using service, matched Federal funding, and local business sponsorship. A significant investment in improving current service in multiple areas across the state will likely require additional support (financial and technical) from state government.

c. *Parties Benefiting from Implementation*

- NH population as a whole benefits from reduced vehicle travel and air pollution
- NH population benefits from improved access to bus service for local travel (potential individual cost savings for such travel) and improved connections to rail and inter-city bus options for longer-distance travel
- NH "transit needy" residents are better served (including disabled and economically disadvantaged populations) and transportation cost for social service organizations could be reduced.
- NH employers would have improved access to labor (particularly in high housing cost areas)

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*):

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):

a. *Existing:* New Hampshire currently has 11 local transit service providers serving Hanover (and surrounding area), Manchester, Nashua, Concord, Coastal New Hampshire (several routes), UNH, Laconia, North Country (service in Berlin-Gorham and Littleton-Lancaster), Keene, Derry-Salem, and Claremont. These services served almost 3 million passengers in 2006 (including parking lot shuttles at UNH and in Hanover – almost 2 million passengers on transit alone). Many of these systems are continuing to explore expansion and improvements to their service.

b. *Proposed:*

- Policies that provide funding to support bus, rail, and bike/pedestrian transportation improvements (see Action 2.C.2.c discussion on options for dedicated funding for public transit).
- Expansion and enhancement of inter-city bus and rail services (e.g., higher quality buses, terminals, improved marketing/informational resources), when connected to local transit systems.
- Compact, mixed-use, walkable development (including affordable housing) in the vicinity of transit access points can facilitate further reductions in VMT (eliminating additional travel by having access to other needs near transit access) and increase access of residents to local transit service.
- Policies that increase the cost of using a vehicle for travel (e.g., increased gas prices, higher parking charges, VMT-based insurance and/or registration).

6. Timeframe for Implementation: Improved services and amenities could be phased in over time beginning in 2010-2012 as state/local funding becomes available (could possibly be matched to federal funding) with an initial focus on increasing/improving service for higher-population areas (i.e., Southern New Hampshire: Manchester, Nashua, and Seacoast).

7. Anticipated Timeframe of Outcome: Reductions in VMT would begin to be realized as soon as services are improved, and would be expected to increase over time as service is further improved and marketed and complementary policies are put in place to increase ridership.

<u>Program Evaluation</u>

1. Estimated CO_2 Emission Reductions: (Quantified with 2.B.1.a)

   a. Short-term (2012): 0.01 $MMTCO_2e$ /year
   b. Medium-term (2025): 0.11 $MMTCO_2e$ /year
   c. Long-term (2050): 0.29 $MMTCO_2e$ /year

2. Economic:

   a. Costs:

      i. Implementation Cost: Moderately low ($2.5 million to $25 million)
      ii. Timing: Constant / even
      iii. Impacts: Consumer – evenly distributed

   b. Savings:

      i. Potential Economic Benefit: Moderate ($25 million to $125 million)
      ii. Timing: Low short-term/Mostly long-term
      iii. Impacts:

3. Other Benefits/Impacts:

   a. *Environmental*: This would reduce emissions of carbon dioxide, greenhouse gases, and other primary air pollutants in order to mitigate the effects of climate change and pollution of our ecosystems. This would lead to improved air and water quality directly as well as have more indirect effects on the fish and wildlife and the ecosystems upon which they depend.

   b. *Health:* Human health benefits will be realized by decreasing exposure to toxic and hazardous pollutants, many of which may have an effect that is exacerbated by the increase in hot summer days. Avoiding the impacts of air pollution can reduce the incidence of cardiac and respiratory disease. May also increase the use of more active travel modes (walk/bike) for part of trip, improving health of individuals.

   c. *Social:* Improved mobility for "transit needy" populations. Important component of balanced, multi-modal transportation system.

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*):

   a. *Technical*: Moderate / high. Most local transit providers are well-aware of the type of service improvements and amenities required to attract additional riders, making it relatively easy to implement improvements if sufficient funding is provided. State- or regional-level coordination/oversight would be necessary to distribute funds and share information regarding the most effective strategies. A consistent level and quality of service provided by all systems across NH will provide greater certainty for passengers (reducing uncertainty and facilitating the use of transit when traveling to new areas).

   b. *Economic*: Low. Funding constraints are significant – will require identification and implementation of new funding mechanisms for capital and operating expenses. Local municipalities are authorized (HB 648, 1998 – get RSA citation) to collect an additional motor vehicle registration fee of up to $5.00 for the purposes of supporting a municipal transportation improvement fund to support a wide-variety of transportation system improvements, including public transportation (few communities currently are taking advantage of this authority – check!). Implementation would be particularly difficult if dependent solely on municipal funding (or dependent on local authorization – e.g., town vote).

   c. *Statutory/Regulatory*: Low. Difficult to establish new funding mechanism, likely will require legislative support (at state level) and local community support (e.g., town meeting vote) to secure required funding.

d. *Social*: Moderate. There is growing support for providing a balanced, multi-modal transportation system, but support for local funding would likely be difficult to obtain. Recent increases in ridership of existing local transit systems indicate positive demand for this service, however, there are significant social barriers to increasing ridership. Marketing is required to generate ridership (e.g., educate public on availability, convenience, access to system, benefits) and reduce view of bus travel as inferior to SOV travel.

5. Other Factors of Note: Although this action by itself is estimated to result in relatively small reductions in VMT, there are substantially greater reductions available in expanding local bus service as part of a comprehensive multi-modal transportation investment program – particularly for NH's more populated regions. Complementary policies that facilitate people making use of local bus service (such as easy connections to inter-city travel options, high-quality and frequency of service, improved walkability around transit access points to allow them to easily reach their final destination) could result in substantially higher levels of ridership.

   If portions of NH are included as part of the Boston Urbanized Area after the next Census (2010), those areas will no longer be eligible for federal financial support for operating expenses for transit and additional local/state funding sources will be required.

6. Level of Group Interest: High. The working group considered this an essential action to undertake in the near-term to achieve significant reductions in CO_2 emissions from the transportation and land use sector.

7. References:

   - NHDOT, Draft Final Bus Transit Needs and Benefits Analysis for Long-Range Transportation Plan – Technical Memo, 2008.
   - Nashua Regional Planning Commission, *Transit Plan for the Nashua Region.*, December 2003.
   - Cooperative Alliance for Seacoast Transportation, website for bus service to several routes throughout the coastal region of New Hampshire, www.COASTbus.org.

TLU Action 2.B.1.a – Expand Local/Intra-Regional Transit (Bus) Service

Summary

Expand the service areas of existing local and intra-regional transit (bus) systems and create new systems to: 1) provide service for all communities with 20,000 or more population; 2) provide service connections for all communities having 10,000 or more population ***and*** a defined, walkable, mixed-use central area (of at least 100 acres); 3) provide connections to smaller satellite communities by extending existing local/intra-regional transit systems serving New Hampshire's largest cities and population centers (Manchester, Nashua, Concord, and Seacoast); and 4) identify and implement additional local transit options over time.

Program Description

1. Mechanism (*i.e., how the policy or program achieves the desired result*): Existing local bus service within New Hampshire has experienced significant growth in ridership over the last 3 to 5 years but does not yet provide service to many larger communities or to multiple towns within various regions. This action would expand the service areas of local transit systems and create new systems to provide service to most communities with 10,000+ population as well as smaller communities in close proximity to New Hampshire's largest population centers. Providing transit service to currently unserved areas and a greater percentage of New Hampshire's residents would reduce single-occupancy vehicle use and vehicle miles traveled (VMT). It is assumed that new bus transit would be introduced at a minimum level of service (e.g., 4 roundtrips per day) and supported by the necessary marketing/promotion. The level of service would be increased over time along with implementation of complementary policies to increase ridership.

2. Implementation Plan (*i.e., how to implement the specific policy or program*)
    a. *Method of Establishment (e.g., legislation, executive order):* Metropolitan Planning Organizations (MPOs) (or Regional Planning Commissions (RPCs) in areas without an MPO), in coordination with funding and technical guidance from NHDOT, work with local transit providers, regional/local transportation councils, and municipalities to establish and/or expand service. Legislative action is likely required to provide for increased funding and technical assistance (particularly to establish new service in more rural areas).
    b. *Resources Required*
        - MPO (or RPC) and NHDOT staff time (will require additional staff time to establish service – coordinate with local municipalities, prepare necessary studies to design service, establish new local/regional nonprofit organizations to manage systems)
        - Funding (local/state match $) for studies required to establish service and receive Federal funding.
        - Capital investment in infrastructure (e.g., buses, bus stop facilities (bench, shelters))
        - Operating subsidy and marketing
        - Some portion of the funding could be Federal, although local/state match is required. Local match could be generated from a local vehicle registration fee (e.g., $5 per vehicle for 11-town Greater Derry Greater Salem region would generate approximately $700,000 per year (Salem-Derry 2003)) or other options discussed under Action 2.B.2.c.
    c. *Barriers to Address (especially for medium to low feasibility actions):* Requires significant public investment and potential operating subsidy in the near term.

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc.*):

    a. *Parties Responsible for Implementation*: MPOs/RPCs and NHDOT, local transit providers, regional/local transportation councils, municipalities.

    b. *Parties Paying for Implementation:* A variety of funding options and combinations are currently used to support local transit systems, including local governments, passengers using service, matched Federal funding, and local business sponsorship. A significant expansion of service in multiple areas across the state will likely require additional support (financial and technical) from state government.

    c. *Parties Benefiting from Implementation:*

    - NH population as a whole benefits from reduced vehicle travel and air pollution
    - NH population benefits from improved access to bus service for local travel (potential individual cost savings for such travel) and improved connections to rail and inter-city bus options for longer-distance travel
    - NH "transit needy" residents are better served (including disabled and economically disadvantaged populations) and transportation cost for social service organizations could be reduced.
    - NH employers would have improved access to labor (particularly in high housing cost areas)

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*):

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):

    a. *Existing:*

    New Hampshire currently has 11 local/intra-regional transit service providers serving Hanover (and surrounding area), Manchester, Nashua, Concord, Coastal New Hampshire (several routes), UNH and surrounding communities, Laconia, North Country (service in Berlin-Gorham and Littleton-Lancaster), Keene, Derry-Salem, and Claremont. These services served almost 3 million passengers in 2006 (including parking lot shuttles at UNH and in Hanover – almost 2 million passengers on transit alone). Many of these systems are continuing to explore expansion and improvements to their service (much of which is capture within this action).

    The Greater Derry Greater Salem Regional Transportation Council (RTC) was formed in 1998 to study and implement transit within an 11 town region (Chester, Derry, Londonderry, Sandown, Danville, Hampstead, Atkinson, Plaistow, Salem, Windham, and Pelham). Salem-Derry service is now operating as a demand-response system, with a fixed-route planned to begin in 2008-2009.

    b. *Proposed:*

    - Complementary policies that facilitate people making use of local bus service (such as easy connections to inter-city travel options, high-quality and frequency of service, improved walkability around transit access points to allow them to easily reach their final destination) could result in substantially higher levels of ridership over the long-term. Local/intra-regional bus service also facilitates increased use of longer-distance, inter-city transit/bus by ensuring that passengers can easily access the surrounding area upon arriving at the terminating point of the intercity bus trip.
    - Policies that provide funding to support bus, rail, and bike/pedestrian transportation improvements (see Action 2.C.2.c discussion on options for dedicated funding for public transit).
    - Expansion and enhancement of inter-city bus and rail services (e.g., increased service, upgraded terminals, improved marketing/informational resources), when connected to local transit systems.

- Enhancement of existing local transit services (increased service, improved amenities, increased marketing), particularly valuable for components of this action involving extensions of existing services.
- Compact, mixed-use, walkable development (including affordable housing) in the vicinity of transit access points can facilitate further reductions in VMT (eliminating additional travel by having access to other needs near transit access) and increase access of residents to local transit service.
- Policies that increase the cost of using a vehicle for travel (e.g., increased gas prices, higher parking charges, VMT-based insurance and/or registration).

6. Timeframe for Implementation: New services could be phased in over time beginning in 2010-2012 as state/local funding becomes available (could be matched to federal funding) with an initial focus on providing service for higher-population areas currently lacking fixed-route service (i.e., Salem-Derry area, Manchester surrounding region, Nashua surrounding region). New services could continue to be added for areas with adequate population and compact development to facilitate effective transit service.

7. Anticipated Timeframe of Outcome: Reductions in VMT would begin to be realized as soon as new service is implemented, and would be expected to increase over time as service is improved and marketed and complementary policies are put in place to increase ridership.

<u>Program Evaluation</u>

1. Estimated CO_2 Emission Reductions: (Quantified with 2.B.1.b)
    a. Short-term (2012): 0.01 $MMTCO_2e$ /year
    b. Medium-term (2025): 0.11 $MMTCO_2e$ /year
    c. Long-term (2050): 0.29 $MMTCO_2e$ /year

2. Economic:
    a. Costs:
        i. Implementation Cost: Moderately low ($2.5 million to $25 million)
        ii. Timing: Constant / even
        iii. Impacts: Consumer – evenly distributed
    b. Savings:
        i. Potential Economic Benefit: Moderate ($25 million to $125 million)
        ii. Timing: Low short-term/Mostly long-term
        iii. Impacts:

3. Other Benefits/Impacts:
    a. *Environmental*: This would reduce emissions of carbon dioxide, greenhouse gases, and other primary air pollutants in order to mitigate the effects of climate change and pollution of our ecosystems. This would lead to improved air and water quality directly as well as have more indirect effects on the fish and wildlife and the ecosystems upon which they depend.
    b. *Health:* Human health benefits will be realized by decreasing exposure to toxic and hazardous pollutants, many of which may have an effect that is exacerbated by the increase in hot summer days. Avoiding the impacts of air pollution can reduce the incidence of cardiac and respiratory disease. May also increase the use of more active travel modes (walk/bike) for part of trip, improving health of individuals.
    c. *Social:* Improved mobility for "transit needy" populations. Important component of balanced, multi-modal transportation system.

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*):
    a. *Technical*: Moderate / low. Requires significant coordination of multiple entities to establish new local transit service. Expansion of the service area of existing entities to provide service to additional areas is likely easier to implement. State-level coordination/oversight would be useful in creating a coordinated network throughout NH.
    b. *Economic*: Low. Funding constraints are significant – will require identification and implementation of new funding mechanisms for capital and operating expenses. Local municipalities are authorized (HB 648, 1998 – get RSA citation) to collect an additional motor vehicle registration fee of up to $5.00 for the purposes of supporting a municipal transportation improvement fund to support a wide-variety of transportation system improvements, including public transportation (few communities currently are taking advantage of this authority – check!). Implementation would be particularly difficult if dependent solely on municipal funding (or dependent on local authorization – e.g., town vote).
    c. *Statutory/Regulatory*: Low. Difficult to establish new funding mechanism, likely will require legislative support (at state level) and local community support (e.g., town meeting vote) to secure required funding.
    d. *Social*: Moderate. There is growing support for providing a balanced, multi-modal transportation system, but support for local funding would likely be difficult to obtain. Recent increases in ridership of existing local transit systems indicate positive demand for this service. Marketing is required to generate ridership (e.g., educate public on availability, convenience, access to system, benefits) and reduce view of bus travel as inferior to SOV travel.

5. Other Factors of Note: There are several recent studies within NH exploring options for establishing new local and/or inter-city bus services (e.g., Carroll County 2007, Salem-Derry 2003, Meredith 2004, Nashua 2003). These studies – together with information available on the cost and performance of current systems – provide the basis for estimating the cost and ridership (and resulting reduction in VMT) associated with this action.

    If portions of NH are included as part of the Boston Urbanized Area after the next Census (2010), those areas will no longer be eligible for federal financial support for operating expenses for transit and additional local/state funding sources will be required.

6. Level of Group Interest: High. The working group considered this an essential action to undertake in the near-term to achieve significant reductions in CO_2 emissions from the transportation and land use sector.

7. References:

    - NHDOT, Draft Final Bus Transit Needs and Benefits Analysis for Long-Range Transportation Plan – Technical Memo, 2008.
    - Community Transportation Association of America, *Carroll County, NH Transit Operations Expansion,* Final Report, November 1, 2007.
    - Lakes Region Planning Commission, *Study of Expanded Transit Service in Meredith, NH,* Final Report, November 2004.
    - Greater Derry Greater Salem Regional Transportation Council, Rockingham Planning Commission, Southern NH Planning Commission, and Nashua Regional Planning Commission, *Greater Derry Greater Salem Regional Transit Plan*, 2003.
    - Nashua Regional Planning Commission, *Transit Plan for the Nashua Region,* December 2003.
    - Cooperative Alliance for Seacoast Transportation, website for bus service to several routes throughout the coastal region of New Hampshire, www.COASTbus.org.

TLU Action 2.B.2.h – Improve Existing Inter-City Bus Service

Summary

Improve the quality of facilities and increase the frequency of service on current inter-city bus services in New Hampshire to increase ridership levels, thus reducing VMT and vehicle-related carbon emissions. Enhancements would include 1) higher-quality bus stops and terminals with additional services and amenities; 2) improved and additional public intermodal facilities, shared with local and other inter-city providers to facilitate connections; 3) increased frequency of service; and (4) better connections to surrounding areas through improved walkability and easier access to local transit.

Program Description

1. Mechanism (*i.e., how the policy or program achieves the desired result*): This action would significantly increase ridership levels, thus reducing single-occupancy vehicle travel, vehicle miles traveled, and vehicle-related carbon emissions. Improvements to existing facilities and establishment of new intermodal facilities – to create better inter-city and local transit connections – would increase ridership on inter-city routes as well as on other systems.

2. Implementation Plan (*i.e., how to implement the specific policy or program*):
    a. *Method of Establishment (e.g., legislation, executive order):* NHDOT and commercial bus companies work together to identify and implement appropriate improvements and increases in service.
    b. *Resources Required:*
        - NHDOT staff time (may require additional staff to establish service)
        - Funding to conduct required studies
        - Public investment in infrastructure (e.g., additional buses and upgraded terminals)
        - Operation and maintenance cost (public subsidy)
    c. *Barriers to Address (especially for medium to low feasibility actions):* Requires significant public investment and potential operating subsidy in the near term.

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc.*):
    a. *Parties Responsible for Implementation:* NHDOT and commercial (local and inter-city) bus carriers.
    b. *Parties Paying for Implementation:* NH government, passengers using service (possibly Federal matching funding available), commercial bus companies.
    c. *Parties Benefiting from Implementation:*
        - NH population as a whole would benefit from reduced vehicle travel and air pollution.
        - NH population would benefit from improved access to bus service for longer-distance travel (potential individual cost savings for such travel)
        - NH "transit needy" residents (including disabled and economically disadvantaged populations) would see improved service.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*): Including new services to begin in 2008, New Hampshire currently has some level of inter-city bus service connecting about 21 locations, with approximately 60-65 round trips per day (predominantly with service to Boston), and an estimated ridership of about 1.5 million passenger trips (one-way). NH currently has 11 existing intermodal facilities, which are in excellent condition and offer high level passenger amenities (NHDOT 2003).

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):
    a. Provision of an adequate number and sized park-and-ride facilities is an essential component of successful inter-city bus service in a rural/suburban area such as NH.
    b. Policies that provide funding to support bus, rail, and bike/pedestrian transportation improvements (see Action 2.C.2.c discussion on options for dedicated funding for public transit).
    c. Establishment and enhancement of local transit service and additional rural "feeder" services to connect riders to inter-city service.
    d. Establishment of additional intermodal centers connecting inter-city bus service to local bus service and rail, when available.
    e. Compact, mixed-use, walkable development in the vicinity of transit access points can facilitate further reductions in VMT (eliminating additional travel by having access to other needs as well as transit) and increase access of residents to inter-city transit service. Promoting joint uses of intermodal transportation centers, such as retail shops and food.
    f. Policies that increase the cost of using a vehicle for travel (e.g., increased gas prices, higher parking charges, VMT-based insurance and/or registration).

6. Timeframe for Implementation: New services could be phased in over time beginning in 2010-2012 as state funding becomes available (could possibly be matched with federal funding).

7. Anticipated Timeframe of Outcome: Reductions in VMT would be realized as soon as improvements are implemented and ridership increases. VMT reductions would be greater over time as service is further improved and marketed and complementary policies put in place to increase ridership.

<u>Program Evaluation</u>

1. Estimated CO_2 Emission Reductions:
    a. Short-term (2012): 0.01 $MMTCO_2e$ /year
    b. Medium-term (2025): 0.02 $MMTCO_2e$ /year
    c. Long-term (2050): 0.15 $MMTCO_2e$ /year

2. Economic Effects:
    a. Costs:
        i. Implementation Cost: Moderately low ($2.5 million to $25 million)
        ii. Timing: Constant / even
        iii. Impacts: Consumer
    b. Savings:
        i. Potential Economic Benefit: Moderate ($25 million to $125 million)
        ii. Timing: Low short-term/Mostly long-term
        iii. Impacts: Consumer

3. Other Benefits/Impacts:

    See Litman, Todd. *Evaluating Public Transit Benefits and Costs: Best Practices Guidebook,* Victoria Transport Policy Institute, January 2008. Table 3.1 provides a listing of potential social costs and benefits associated with transit investments, including (among others) mobility and travel efficiency improvements, health benefits, and

economic development gains. He estimates a benefit/cost ratio of 1.8 for current bus service for a case study analysis of a medium-sized city (p.84).

a. *Environmental*: This would reduce emissions of carbon dioxide, greenhouse gases, and other primary air pollutants in order to mitigate the effects of climate change and pollution of our ecosystems. This would lead to improved air and water quality directly as well as have more indirect effects on the fish and wildlife and the ecosystems upon which they depend.

b. *Health:* Human health benefits will be realized by decreasing exposure to toxic and hazardous pollutants, many of which may have an effect that is exacerbated by the increase in hot summer days. Avoiding the impacts of air pollution can reduce the incidence of cardiac and respiratory disease. It may also increase use of more active travel modes (walk/bike) for part of trip, improving health of individuals.

c. *Social:* Improved quality of transit travel experience and user convenience, e.g., less "dead" time between connections. Intermodal transit centers can provide a focal point for a community, provide an easily-identifiable location for all transportation information, and be an important component of economic development within a community. Improved mobility for "transit needy" populations (increased need for travel alternatives from rural areas with rising gas prices). Rural connection provides a benefit to the long-distance commuter and those seeking services (e.g., medical services). Important component of balanced, multi-modal transportation system.

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*):

   a. *Technical:* High / moderate. NHDOT has successfully worked with service providers to establish new bus service elsewhere in NH, however, bus companies have to be interested.

   b. *Economic:* Moderate / low. Adequate funding is a challenge (NH currently lacks sufficient funds for matching federal $ available for transit. At the upper end of investment levels, there may be challenges in obtaining enough federal funds). Requires new, sustainable public funding source to establish and maintain upgraded facilities and service. It is very difficult to raise private capital to invest in terminals (NHDOT 2003), particularly multi-modal/inter-modal facilities serving multiple carriers.

   c. *Statutory/Regulatory:* Moderate / low. Likely requires legislative action to secure required funding.

   d. *Social:* Moderate. Marketing required to generate ridership (e.g., educate public on availability, convenience, access to system, benefits) and reduce view of bus travel as inferior to SOV travel.

5. Other Factors of Note:

   There are substantially greater reductions available in improving inter-city bus service as part of a comprehensive multi-modal transportation investment program. Complementary policies that facilitate people making use of inter-city bus service (such as easy access to local transit to allow them to easily reach their final destination, or co-location of other services) could result in substantially higher levels of ridership.

   NH Department of Transportation 2003 study, *New Hampshire Statewide Intermodal Transportation Planning* Study, recognized that NH had gone further in its policy of establishing public intermodal terminals than any state in the country, with public intermodal terminals in Concord, Dover, Manchester, Nashua, Keene, Portsmouth, and Manchester Airport, as well as publicly-owned park-and-ride facilities and other public locations. This action includes implementation of the recommendations from this study that would improve ridership on inter-city buses, including upgrading passenger amenities (e.g., shelters, restrooms, information) at 21 bus stops, and establishing intermodal facilities in Hanover, Londonderry, Plymouth, and Meredith. Durham, New London, and Keene were also identified as potential candidates for new intermodal/multi-modal facilities (NHDOT 2003). Durham facility is being upgraded to provide a true multi-modal function (bus and rail). This

action further calls for continuing investments in passenger amenities at additional stops and establishing additional intermodal facilities over time in areas that meet the recommended criteria.

New intercity-bus service facilities are currently under construction at Londonderry, Salem, and Dover. Durham facility is being upgraded to provide a true multi-modal function (bus and rail).

6. Level of Group Interest: High. The working group considered this an essential action to undertake in the near-term to achieve significant reductions in CO_2 emissions from the transportation and land use sector.

7. References:

- NHDOT, Draft Final Bus Transit Needs and Benefits Analysis for Long-Range Transportation Plan – Technical Memo, 2008.
- NH Department of Transportation, NH Statewide Intermodal Transportation Planning Study, Final Report, December 2003.

TLU Action 2.B.1.c – Expand and Improve Bicycle and Pedestrian Infrastructure

Summary

Improve and expand bicycle and pedestrian infrastructure to increase the viability of these travel modes as options for shorter-distance local trips, particularly within existing community centers, around transit-access points, and in other areas of higher-density, compact, mixed-use development. Improving the availability of biking and walking as a viable travel option would help reduce single-occupancy vehicle use and total vehicle miles traveled, particularly for short-distance, local trips within compact areas and around transit-access points.

Program Description

1. Mechanism (*i.e., how the policy or program achieves the desired result*): Example policy actions to implement/continue:
   - Expand existing bicycle routes program with NHDOT with an emphasis on local and intra-regional networks.
   - Implement "complete streets" roadway improvement standards (at local and state levels).
   - Continue implementation of the Context Sensitive Solutions (CSS) project development approach by NHDOT.
   - Encourage adoption of higher-density, mixed-use zoning in pedestrian-oriented areas and apply pedestrian-oriented design standards for new residential and commercial development (see actions under TLU Goal 2.C).
   - Continue/expand "Safe Routes to School" program by NHDOT.

   Improving the availability of biking and walking as a viable travel option would help reduce single-occupancy vehicle use and total vehicle miles traveled, particularly for short-distance, local trips within compact areas and around transit-access points.

2. Implementation Plan (*i.e., how to implement the specific policy or program*):
   a. *Method of Establishment (e.g., legislation, executive order):* NHDOT could expand its existing bike-ped program, along with implementing "complete streets" approaches that ensure that all modes of travel are accommodated and supported. Assistance and grant funding could be coordinated by the Metropolitan Planning Organizations (MPOs) or Regional Planning Commissions (RPCs), together with NHDOT. Legislative action is likely required to provide for increased funding and technical assistance to identify and implement appropriate actions.
   b. *Resources Required*
      - MPO (or RPC) and NHDOT staff time (will require additional staff to coordinate assistance program).
      - Funding (local/state match for Federal $) for studies required to identify appropriate improvements.
      - Initial and on-going capital improvements.
   c. *Barriers to Address (especially for medium to low feasibility actions):*
      Acceptance of bicycle and pedestrian facilities (in some places). Could involve increased costs for projects.

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc.*):
   a. *Parties Responsible for Implementation:* Local municipalities, with coordination by MPOs/RPCs and/or NHDOT.

b. *Parties Paying for Implementation:* Local municipalities. Significant investments in multiple areas across the state will likely require additional support (financial and technical) from state government.

c. *Parties Benefiting from Implementation:* NH population as a whole benefits from reduced vehicle travel and air pollution. Can help strengthen communities – increasing economic activity and community vitality.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*):

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):

a*. Existing:* NHDOT planning/project emphasis on Context Sensitive Solutions, *complete streets*, and existing bicycle/pedestrian program, NHDOT funding programs (e.g., TE, CMAQ).

b*. Proposed*

- Policies that provide funding to support bus, rail, and bike/pedestrian transportation improvements (see Action 2.C.2.c discussion on options for dedicated funding for public transit).
- Expansion and enhancement of local bus services.
- Zoning to provide compact, mixed-use, walkable development (including affordable housing) (see 2.C. Actions)
- Policies that increase the cost of using a vehicle for travel:
  TLU Action 2.A.2 – Implement Congestion Pricing (*cross-referenced as TLU Action 1.D.5*)
  TLU Action 2.A.3 – Create a VMT-Based Insurance Premium Structure
  TLU Action 2.A.4 – Implement VMT-Based Registration Fees
  TLU Action 2.A.5 – Increase the State Gasoline Tax
  TLU Action 2.A.6 – Apply a Surcharge to High Carbon Fuels
  TLU Action 2.A.7 – Create Initiative to Reduce Availability of Free and Inexpensive Parking

6. Timeframe for Implementation: On-going beginning in 2010-2012 as state/local funding becomes available (could possibly be matched to federal funding) with an initial focus on increasing facilities in higher-population areas (i.e., community centers within southern NH) and where roadway/streetscape improvements are planned.

7. Anticipated Timeframe of Outcome: Reductions in VMT would begin to be realized as soon as bike/ped facilities are improved.

<u>Program Evaluation</u>

1. Estimated CO_2 Emission Reductions:
   a. Short-term (2012): 0.02 $MMTCO_2e$ /year
   b. Medium-term (2025): 0.08 $MMTCO_2e$ /year
   c. Long-term (2050): 0.11 $MMTCO_2e$ /year

2. Economic Effects:
   a. Costs:
      i. Implementation Cost: Moderately low ($2.5 million to $25 million)
      ii. Timing: Constant / even
      iii. Impacts: Consumer

b. Savings:

i. Potential Economic Benefit: Moderate ($25 million to $125 million)
ii. Timing: Low short-term/Mostly long-term
iii. Impacts: Consumer

3. Other Benefits/Impacts:

a. *Environmental*: Reduced air emissions from SOV travel and congestion. This would reduce emissions of carbon dioxide, greenhouse gases, and other primary air pollutants in order to mitigate the effects of climate change and pollution of our ecosystems. This would lead to improved air and water quality directly as well as have more indirect effects on the fish and wildlife and the ecosystems upon which they depend.

b. *Health:* Human health benefits will be realized by decreasing exposure to toxic and hazardous pollutants, many of which may have an effect that is exacerbated by the increase in hot summer days. Avoiding the impacts of air pollution can reduce the incidence of cardiac and respiratory disease. May also increase the use of more active travel modes (walk/bike) for part of trip, improving health of individuals.

c. *Social:* Improved communities – increased economic activity and community vitality

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*):

a. *Technical*: High / Moderate.

b. *Economic*: Moderate. Funding constraints are significant – likely will require identification and implementation of new funding mechanisms. Local municipalities are authorized (HB 648, 1998 – get RSA citation) to collect an additional motor vehicle registration fee of up to $5.00 for the purposes of supporting a municipal transportation improvement fund to support a wide-variety of transportation system improvements, including bike/ped improvements (few communities currently are taking advantage of this authority).

c. *Statutory/Regulatory*: High / Moderate. Policy already has moved this direction. However, could be difficult to obtain funding. Could require legislative support (at state level) and local community support (e.g., town meeting vote) to secure required funding.

d. *Social*: High / Moderate. There is growing support for providing a balanced, multi-modal transportation system, but support for local funding could be difficult to obtain.

5. Other Factors of Note: N/A

6. Level of Group Interest: Moderate. The working group considered this a supporting action to undertake in the near-term (i.e., supports other actions and/or achieves moderate reductions but not considered "essential" to achieve substantial CO_2 reductions from the transportation and land use sector)

7. References:

- NHDOT. *NH Long Range Transportation Plan: A Framework for Transforming Transportation in New Hampshire,* Public Draft. May 1, 2008.
- Federal Highway Administration. *Interim Report to the U.S. Congress on the Nonmotorized Transportation Pilot Program, SAFETEA-LU Section 1807,* http://www.fhwa.dot.gov/environment/bikeped/ntpp/index.htm.

TLU Actions 2.B.2.a – Maintain and Expand Passenger Rail Service

Summary

Maintain and expand passenger rail service within New Hampshire as part of a balanced, state-wide, multi-modal transportation system that keeps the state competitive with and accessible to the region. Initial actions would focus on sustaining and improving existing passenger rail service. Near- to mid-term actions would focus on improving and expanding New Hampshire's primary travel corridors (I-93 from Salem through Manchester to Concord, and the full traverse of I-95 on the Seacoast). Long-term actions would address the goal of expanding passenger rail service throughout New Hampshire.

Program Description

1. Mechanism (i.*e., how the policy or program achieves the desired result*): New Hampshire would undertake measures to support and extend passenger rail service within the state as part of a balanced, multi-modal transportation system. The following timeline and actions are proposed:
    a. Immediate initiatives: Sustain and improve existing passenger rail service and plan for future service, as follows:
        - Provide dedicated, long-term financial support;
        - Make strategic improvements to service, e.g., improve intermodal facilities and make track upgrades to support higher speeds;
        - Protect active/inactive rail corridors; and
        - Expand rail service planning (consider a 10-year rail investment plan).
    b. Near-term actions:
        - Implement new services now under study, e.g., extensions from Massachusetts to Nashua and Manchester, and from Newburyport to Kittery; and
        - Because Canada is New Hampshire's major trading partner, improve/restore lost rail connections to support both freight and passenger service to Canada.
    c. Future actions:
        - Review the historic rail system for possible applicability to future rail service, and
        - Study and implement additional extensions and restorations of service with the goal of establishing a state-wide passenger rail system.

2. Implementation Plan (*i.e., how to implement the specific policy or program*):
    a. *Method of Establishment (e.g., legislation, executive order):* Continue and extend role of NHDOT and newly-formed NH Rail Authority. Involve other interested parties such as state agencies, business development and social service organizations. A fully developed multi-modal system would require legislation, the revision of zoning ordinances, education and changes in spending and policy at federal, state and local levels.
    b. *Resources Required:* Substantial funding required for studies, capital improvements, land acquisition, and operating expenses.
    c. *Barriers to Address (especially for medium to low feasibility actions):*
        - Requires significant (and continued) public expenditure

- Need for improved understanding regarding how individual modes interact and extent of benefits available from a complete multi-modal system.
- Restoration of the connectivity that existed in the historic rail system, which once had 24 points of rail access to neighboring states and Canada. In the Southern tier only the Downeaster corridor exists, and in the northern part of the state only Claremont can be accessed from Vermont. However, there is no direct rail connection with Canada, our major trading partner. All others have been temporarily lost but could in certain cases be restored by using those abandoned corridors preserved in the NH DOT railbanking program.
- Local zoning typically does not envision the restoration of a rail transportation system and does not allow for transit-oriented development.

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc*.):
    a. *Parties Responsible for Implementation:* The parties involved include a collaboration of planning agencies, federal, state and local government, the business community, media organizations and advocacy organizations and the general public
    b. *Parties Paying for Implementation:* Various government entities, the general public and the business community.
    c. *Parties Benefiting from Implementation:* The general public, the business community (particularly those that can redirect long-distance shipping from truck to rail), economic development entities, social service agencies, the tourism industry, as well as municipalities.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*):

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):
    a. *Existing:*
        - NH has railbanked many miles of old rail corridors that parallel all of our main highways.
        - Downeaster service through NH – needs to be sustained.
        - Increased Federal funding for rail system improvements
    b. *Proposed.*
        - Expansion and improvement of other modes of public transportation (i.e., bus service) as well as complementary facilities (e.g., intermodal facilities) – see actions under category 2B.
        - Complementary land uses emphasizing higher-density, mixed-use, walkable development (including affordable housing) in the vicinity of rail stations (see actions under category 2C, particularly 2.C.2).

6. Timeframe for Implementation: Immediate actions can be taken to sustain and improve existing service. Service extensions now under study can/should be implemented within 10-20 years. State-wide passenger service will take 20-30 years to restore.

7. Anticipated Timeframe of Outcome: The benefits of a transportation system with passenger rail would occur in anticipation of the first train (as land development is influenced). Benefits would increase over time as travel behavior and land use adjust.

<u>Program Evaluation</u>

1. Estimated CO_2 Emission Reductions:

a. Short-term (2012): 0.00 $MMTCO_2e$ /year
b. Medium-term (2025): 0.05 $MMTCO_2e$ /year
c. Long-term (2050): 0.15 $MMTCO_2e$ /year

2. Economic Effects:

   a. Costs:

      i. Implementation Cost: Moderate ($25 million to $125 million)
      ii. Timing: Constant / even
      iii. Impacts: Evenly distributed

   b. Savings:

      i. Potential Economic Benefit: Very high (Greater than $1 billion)
      ii. Timing: Constant / even
      iii. Impacts: Evenly distributed

3. Other Benefits/Impacts:

   a. *Environmental*: Better use of land if encourage compact, transit-oriented development near stations, as well as enhanced air quality due to reduced emissions of carbon dioxide, greenhouse gases, and other primary air pollutants in order to mitigate the effects of climate change and pollution of our ecosystems. This would lead to improved air and water quality directly as well as have more indirect effects on the fish and wildlife and the ecosystems upon which they depend.

   b. *Health:* Human health benefits will be realized by decreasing exposure to toxic and hazardous pollutants, many of which may have an effect that is exacerbated by the increase in hot summer days. Avoiding the impacts of air pollution can reduce the incidence of cardiac and respiratory disease. Also, avoids tension from driving and encourages walking through transit-oriented development around rail stations.

   c. *Social*: Public transportation options can provide additional travel opportunities for citizens and increase community vitality by increasing opportunities for human interaction on a daily basis. Provide transportation options for the elderly and handicapped.

      See Litman, Todd. *Evaluating Public Transit Benefits and Costs: Best Practices Guidebook.* January 2008. Victoria Transport Policy Institute. Table 3.1 provides a listing of potential social costs and benefits associated with transit investments, including (among others) mobility and travel efficiency improvements, health benefits, and economic development gains. This report also has a good discussion comparing the benefits of bus and rail service.

   d. *Other*: Improves the marketability of property near rail stations and corridors. Freight rail allows for choice in the shipment of goods thus allowing for more opportunity to obtain competitive prices for shipping materials. Provides a choice in transportation modes between car, bus and rail.

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*): With the establishment of the transit authority and the passage of a rail liability bill, passenger rail is finally being acknowledged as an alternative mode of transportation. However, in addition to the issue of funding there is the challenge of the reduced size of the rail infrastructure.

   a. *Technical*: An evaluation is being conducted to extend rail service beyond Lowell to Nashua and Manchester. The Rt. 93 transit study is expected to recommend rail as a transit enhancement. The Rockingham Planning Commission has evaluated an extension of rail service beyond Newburyport to Kittery. Phase one of a study to evaluate Boston-Montreal high speed rail service.

b. *Economic*: Two reports commissioned by the city of Manchester confirm that transit would be a key to it economic well being. The Northern New England Passenger Rail Authority (NNEPRA) operators of the Downeaster, have released a study that confirms the positive effect of rail on economic development (4). Nashua Regional Planning Commission has commissioned a similar study with the same results.(1)

c. *Statutory/Regulatory:* Excellent as NH has created a transit authority to develop and operate rail. Governor Lynch ha signed into law a passenger rail liability cap bill. Limited funding for public transportation is still a significant barrier that needs to be addressed.

d. *Social*: There is growing public support for the restoration of rail service in New Hampshire, although this can be tempered by concerns regarding specific alignments. Rail as exemplified by the Downeaster has served to recondition the public perception on rail from a vestige of nostalgia to one that is part of the fabric of daily life.

5. Other Factors of Note: The renewed interest in rail is relatively recent in NH but not to the region or the country where billions are being invested in the creation and expansion of rail corridors for freight and passenger needs as well as the reintroduction of ferry service.

6. Level of Group Interest: High. The working group considered this an essential action that required initial action in the near-term and continuing effort over the mid- and long-term to achieve significant reductions in CO_2 emissions from the transportation and land use sector.

7. References:

- Nashua Regional Planning Commission, www.nashuarpc.org.
- New Hampshire DOT I93 investment study, http:www.i93transit.org.
- Commuter Rail service to Costal NH, A feasibility study for the Hampton Branch, email @rpc-nh.org.
- Manchester Reports available through the City of Manchester Planning Department, Downeaster study available through Northern New England Rail Passenger Authority (NNEPRA
- http://www.transport2000.ca/atlantic/railvsroad.html.
- NHDOT, NH Long Range Transportation Plan: A Framework for Transforming Transportation in New Hampshire, Public Draft, May 1, 2008.
- NHDOT, Draft Final Bus Transit Needs and Benefits Analysis for Long-Range Transportation Plan – Technical Memo, 2008

TLU Action 2.B.2.b – Maintain and Expand Freight Rail Service

Summary

Maintain and expand freight rail service within the New Hampshire as part of a balanced, state-wide, multi-modal transportation system that keeps the state competitive with and accessible to the region. Initial actions would focus on sustaining and improving existing freight rail service. Near- to mid-term actions would include strategic improvements and expansions to increase freight rail usage. Long-term actions would address the goal of expanding freight rail service throughout New Hampshire.

Program Description

1. Mechanism (i.e., how the policy or program achieves the desired result): New Hampshire would undertake measures to support and extend freight rail service within the state as part of a balanced, multi-modal transportation system. The following timeline and actions are proposed:
    a. Immediate initiatives: Sustain and improve existing freight rail service and plan for future service, as follows:
        - Provide dedicated, long-term financial support;
        - Make strategic improvements to service, e.g., increase tunnel clearance for freight passage, improve intermodal facilities, and make track upgrades to support higher speeds;
        - Protect active/inactive rail corridors; and
        - Plan for expanded rail service (consider a 10-year rail investment plan; conduct a survey similar to what Massachusetts has recently announced to evaluate current freight service and the potential for future freight business).
    b. Near-term actions: Because Canada is New Hampshire's major trading partner, improve/restore lost rail connections to support both freight and passenger service to Canada.
    c. Future actions:
        - Review the historic rail system for possible applicability to future rail service, and
        - Study and implement additional extensions and restorations of service with the goal of establishing a state-wide freight rail system.

2. Implementation Plan (*i.e., how to implement the specific policy or program*):
    a. *Method of Establishment (e.g., legislation, executive order):* Continued and extended role of NHDOT and newly-formed NH Rail Authority. Involve other interested parties such as state agencies, business development and social service organizations. A fully developed multi-modal system would require legislation, the revision of zoning ordinances, education and changes in spending and policy at federal, state and local levels.
    b. *Resources:* Substantial funding required for studies, capital improvements, land acquisition, and operating expenses.
    c. *Barriers to Address (especially for medium to low feasibility actions):*
        - Requires significant (and continued) public expenditure
        - Need for improved understanding regarding how individual modes interact and extent of benefits available from a complete multi-modal system.

- Interacting with existing freight carriers – understanding benefits of multi-modal system (versus perception as competition for business)
- Acceptance of the concept that there is the opportunity for greater freight rail business. Nationally, freight rail capacity cannot keep up with business demands.
- Restoration of the connectivity that existed in the historic rail system, which once had 24 points of rail access to neighboring states and Canada. In the Southern tier only the Downeaster corridor exists. (For instance there is not a direct rail connection with Canada our major trading partner.) All others have been temporarily lost but could in certain cases be restored by using those abandoned corridors preserved in the NH DOT railbanking program.
- Local zoning typically does not envision the restoration of a rail transportation system.
- Public resistance to restored/increased use of rail for freight (e.g., noise and safety concerns)

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc.*):
    a. *Parties Responsible for Implementation:* The parties involved include a collaboration of planning agencies, federal, state and local government, the business community, media organizations and advocacy organizations and the general public.
    b. *Parties Paying for Implementation:* Various government entities, the general public and the business community.
    c. *Parties Benefiting from Implementation:* The general public, the business community (particularly those that can redirect long-distance shipping from truck to rail), economic development entities, social service agencies, the tourism industry, as well as municipalities.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*): In

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):
    a. *Existing:*
        - EPA SmartWay Program, which works with businesses to explore potential benefits of rail freight options.
        - NH has railbanked many miles of old rail corridors that parallel all of our main highways.
        - Increased Federal funding for rail system improvements
    b. *Proposed:* Expansion and improvement of complementary facilities (e.g., intermodal facilities). See actions under TLU Goal 2.B.

6. Timeframe for Implementation: Improvements to enhance freight service could occur over time, beginning with improvements in areas of existing service.

7. Anticipated Timeframe of Outcome: Immediate benefits of enhanced freight service through reduced truck travel and emissions.

<u>Program Evaluation</u>

1. Estimated CO_2 Emission Reductions: Analysis not yet completed.
    a. Short-term (2012):
    b. Medium-term (2025):
    c. Long-term (2050):

2. Economic:

a. Costs:

   i. Implementation Cost: Moderate ($25 million to $125 million)
   ii. Timing: Constant / even
   iii. Impacts: Evenly distributed

b. Savings:

   i. Potential Economic Benefit: Very high (Greater than $1 billion)
   ii. Timing: Constant / even
   iii. Impacts: Evenly distributed

3. Other Benefits/Impacts:

   a. *Environmental*: Greatly reduced air pollution per ton of freight transported. This would reduce emissions of carbon dioxide, greenhouse gases, and other primary air pollutants in order to mitigate the effects of climate change and pollution of our ecosystems. This would lead to improved air and water quality directly as well as have more indirect effects on the fish and wildlife and the ecosystems upon which they depend.

   b. *Health*: Human health benefits will be realized by decreasing exposure to toxic and hazardous pollutants, many of which may have an effect that is exacerbated by the increase in hot summer days. Avoiding the impacts of air pollution can reduce the incidence of cardiac and respiratory disease.

   c. *Social*:

   d. *Other*: Improves the marketability of property near rail stations and corridors. Freight rail allows for choice in the shipment of goods thus allowing for more opportunity to obtain competitive prices for shipping materials. Provides a choice in transportation modes between car, bus and rail.

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*): With the establishment of the transit authority and the passage of a rail liability bill, passenger rail is receiving greater emphasis. However, in addition to the issue of funding, there is the challenge of the reduced size of the rail infrastructure and the lack of focused development effort for freight rail.

   a. *Technical*: Technical issues would need to be studied.

   b. *Economic*:

   c. *Statutory/Regulatory:* Excellent as NH has created a transit authority to develop and operate rail. Limited funding for public transportation is still a significant barrier that needs to be addressed.

   d. *Social*: There is growing public support for the restoration of rail service in New Hampshire, although this can be tempered by concerns regarding specific alignments.

1. Other Factors of Note: The renewed interest in rail is relatively recent in NH but not to the region or the country where billions are being invested in the creation and expansion of rail corridors for freight and passenger needs as well as the reintroduction of ferry service.

2. Level of Group Interest: High. The working group considered this an essential action that required initial action in the near-term and continuing effort over the mid- and long-term to achieve significant reductions in CO_2 emissions from the transportation and land use sector.

3. References:

- Nashua Regional Planning Commission, www.nashuarpc.org.
- New Hampshire DOT I93 investment study, http:www.i93transit.org.

- Commuter Rail service to Costal NH, A feasibility study for the Hampton Branch, email @rpc-nh.org.
- Manchester reports available through the City of Manchester Planning Department.
- Downeaster study available through Northern New England Rail Passenger Authority (NNEPRA).
- http://www.transport2000.ca/atlantic/railvsroad.html.
- NHDOT, NH Long Range Transportation Plan: A Framework for Transforming Transportation in New Hampshire, Public Draft, May 1, 2008.
- NHDOT, Draft Final Bus Transit Needs and Benefits Analysis for Long-Range Transportation Plan – Technical Memo, 2008.

TLU Action 2.B.2.c – Implement a Stable Funding Stream to Support Public Transportation

Summary

Identify and implement a dedicated funding stream to support significant expansion of public transportation in New Hampshire. Public transportation is essential to establishing a balanced, less carbon-intensive transportation system within the state. Public transportation also complements, promotes, and supports low-GHG impact development. However, the current lack of adequate funding is a major impediment to the expansion and operation of public transportation.

Program Description

1. Mechanism (*i.e., how the policy or program achieves the desired result*): A dedicated funding stream to support public transportation could be established by implementing or enabling one or more of the following actions:
   - Increasing the gas tax and amending Article 6-a of the New Hampshire Constitution to remove current restrictions on the use of gas tax revenues for public transportation;
   - Enabling municipalities to adopt a gasoline tax dedicated to public transportation and transit-oriented development;
   - Increasing the amount of the local vehicle registration fee that municipalities can impose to raise funds for transportation projects (currently set at $5 per vehicle);
   - Adopting and dedicating some or all revenues from a feebate program; and/or
   - Adopting and dedicating some or all revenues from a carbon surcharge.

2. Implementation Plan (*i.e., how to implement the specific policy or program*):
   a. *Method of Establishment (e.g., legislation, executive order):* Removing restrictions on the use of gas-tax revenues would require legislative and other processes needed to amend the constitution. All other mechanisms would require legislation.
   b. *Resources Required:* Analysis to determine best and most viable sources/options for generating dedicated funds.
   c. *Barriers to Address (especially for medium to low feasibility actions):* Political

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc.*):
   a. *Parties Responsible for Implementation:* For amendment of Article 6-a, the Legislature and voting public. For all other measures, the Legislature. Could involve significant state staff and non-governmental staff time to analyze options and support proposed legislation.
   b. *Parties Paying for Implementation:* Consumers of fuels
   c. *Parties Benefiting from Implementation:* All of New Hampshire, as a result of reduced GHGs, reduced VMT, greater transportation choice, and economic development opportunities associated with transit-oriented development.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*): The state's smart growth policy, RSA Chapter 9-B.

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):
   a. *Existing:* This action, by generating funds to support public transportation, will reduce wear & tear on highways, thereby supporting efforts to maintain existing roads and bridges.

b. *Proposed:* Actions that add or increase fees or other charges, such as Feebate (Action 1.B.1), registration fee changes (e.g., Actions 1.B.2, 2.A.4), fuel surcharges (e.g., Actions 2..4, 2.A.5) that could be redirected as a dedicated funding source.

6. Timeframe for Implementation: Timeframe for implementation will be tied to the legislative process.

7. Anticipated Timeframe of Outcome: Availability of increased funding could result in short-term improvements in transit service and support longer-term expansions and additions – providing some immediate and greater longer-term reductions in VMT and GHG contributions.

Program Evaluation

1. Estimated CO_2 Emission Reductions: Not individually quantified.

2. Economic Effects:

   a. Costs:
      i. Implementation Cost: Low (0-$2.5 million) (to be subject of study)
      ii. Timing of Benefit:
      iii. Impacts:

   b. Savings:
      i. Potential Economic Benefit: Supporting mechanism; not individually quantified
      ii. Timing of Benefit:
      iii. Impacts: Evenly distributed

3. Other Benefits/Impacts:
   a. *Environmental*: Reduced VMT would – in addition to reducing GHGs – reduce air, noise and water pollution associated with roads and highways; public transportation could support more compact, low GHG-impact development.
   b. *Health*: Reduced VMT would reduce air pollution associated with roads and highways. Increased public transportation could support more healthy, walkable development patterns.
   c. *Social*: Enhancing public transportation will provide greater transportation choice and help meet the needs of the growing elderly population and individuals who cannot afford a personal vehicle.
   d. *Other*

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*):
   a. *Technical*: There are no technical barriers or challenges to implementing this measure.
   b. *Economic*: This measure could have economic impacts on individuals paying the taxes or fees that support the dedicated fund, though those impacts may be reduced for many as a result of behavior modification/reduced VMT. This measure will create powerful economic development opportunities associated with transit-oriented development.
   c. *Statutory/Regulatory*: Establishing a dedicated fund could involve political challenges, the difficulty of which may vary depending on the funding source(s).

5. Other Factors of Note:

6. Level of Group Interest: High. The working group considered this an essential action to undertake in the very near-term to achieve significant reductions in CO_2 emissions from the transportation and land use sector.

7. References:

TLU Action 2.B.2.e – Expand Park-and-Ride Infrastructure

Summary

Expand and improve New Hampshire's park-and-ride infrastructure to support public bus transit and carpooling by 1) creating new park-and-ride lots in new locations, 2) expanding existing facilities nearing capacity, 3) improving the services provided at these facilities (e.g., improved shelters and restroom facilities, increased security, walkable connections to adjoining developed land uses), and 4) expanding marketing efforts to promote use of the facilities.

Program Description

1. Mechanism (*i.e., how the policy or program achieves the desired result*): The availability of high-quality park-and-ride lots can facilitate car/van pooling and transit use by providing a convenient location for riders to connect to these alternative travel options. In our rural/suburban state, the availability of park-and-ride lots is essential to providing effective inter-city bus service. Increases in car/van pooling and transit use would reduce single-occupancy vehicle trips, thus reducing VMT and carbon emissions associated with travel.

2. Implementation Plan (*i.e., how to implement the specific policy or program*):
    a. *Method of Establishment (e.g., legislation, executive order):* NHDOT, Metropolitan Planning Organizations, Regional Planning Commissions, and local municipalities identify locations for new and expanded facilities.
    b. *Resources Required:*
        - NHDOT/MPO/RPC staff time (may require additional staff to significantly expand # areas)
        - Funding for studies to evaluate future location alternatives
        - Capital investment in land and infrastructure (e.g., paving, facilities):
        - Marketing expenses
        - Operating and maintenance expenses
    c. *Barriers to Address (especially for medium to low feasibility actions):* Local acceptance of facilities; environmental constraints.

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc*.):
    a. *Parties Responsible for Implementation:* NHDOT and local municipalities.
    b. *Parties Paying for Implementation:* State government (with possible availability of Federal matching funds).
    c. *Parties Benefiting from Implementation:* New Hampshire's population as a whole would benefit from reduced vehicle travel and air pollution as would commuters and travelers more specifically.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*): New Hampshire currently has 28 park-and-ride locations with over 4,000 parking spaces (with an average of 56 percent usage). Five additional park-and-ride facilities are planned to be added from 2008 to 2011 (adding over 1,600 spaces), and two facilities expanded (adding 400 spaces). Most of these added/expanded facilities are along the southern I-93 corridor. NHDOT is also considering new park-and-rides at six additional locations and expanding all current lots with fewer than 50 spaces. Current larger facilities at Londonderry and Portsmouth, which provide a higher level of amenities and high frequency of bus service, generate a high level of demand.

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):
    - Establishment and enhancement of local transit service to connect riders to park-and-ride facilities.

- Inter-city bus service from additional park-and-ride facilities (particularly along I-93, I-95, Rt. 16, and Rt. 101 – NHDOT 2003).
- Transportation Management Associations, which organize van pools and coordinate other local/inter-city transit options.
- Compact, mixed-use, walkable development in the vicinity of park-and-ride to facilitate further reductions in VMT (eliminating additional travel by having access to other needs within walking distance of park-and-ride) and increase access of residents to park-and-ride.
- Policies that increase the cost of using a vehicle for travel (e.g., increased gas prices, higher parking charges, VMT-based insurance and/or registration).
- Programs that promote carpool/vanpools: rideshare program, commuter-trip reduction programs by businesses, and Transportation Management Associations.

6. Timeframe for Implementation: Improvements to existing park-and-ride areas and additions of new park-and-ride areas would be established over time beginning in 2010-2012 as state funding becomes available (could possibly be matched with federal funding). The potential to establish new intercity-bus service from existing and new park-and-ride would be evaluated on a case-by-case basis.

7. Anticipated Timeframe of Outcome: Reductions in VMT would be realized as soon as new park-and-ride areas are established, and would be expected to increase over time as the availability of the area is marketed and if complementary policies are put in place (e.g., increased bus service).

<u>Program Evaluation</u>

1. Estimated CO_2 Emission Reductions:
    a. Short-term (2012): 0.03 $MMTCO_2e$ /year
    b. Medium-term (2025): 0.04 $MMTCO_2e$ /year
    c. Long-term (2050): 0.05 $MMTCO_2e$ /year

2. Economic Effects:
    a. Costs:
        i. Implementation Cost: Moderate ($25 million to $125 million)
        ii. Timing: Constant / even
        iii. Impacts:
    b. Savings:
        i. Potential Economic Benefit: Moderate ($25 million to $125 million)
        ii. Timing: Low short-term/Mostly long-term
        iii. Impacts: Consumer – evenly distributed

3. Other Benefits/Impacts:
    a. *Environmental*: This would reduce emissions of carbon dioxide, greenhouse gases, and other primary air pollutants in order to mitigate the effects of climate change and pollution of our ecosystems. This would lead to improved air and water quality directly as well as have more indirect effects on the fish and wildlife and the ecosystems upon which they depend.
    b. *Health:* Human health benefits will be realized by decreasing exposure to toxic and hazardous pollutants, many of which may have an effect that is exacerbated by the increase in hot summer days. Avoiding the impacts of air pollution can reduce the incidence of cardiac and respiratory disease. It may

also increase use of more active travel modes (walk/bike) for part of trip, improving health of individuals.

c. *Social:*

d. *Other:*

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*):

   a. *Technical:* High. NHDOT has successfully established multiple park-and-ride areas across NH and has a planned program of continued expansion. It is slightly more difficult to identify and implement appropriate strategies to increase usage (e.g., marketing, improving facilities, establishing bus service), although a user survey for NHDOT 2003 identified several possible types of improvements.

   b. *Economic:* Moderate. Adequate funding is a challenge, although it is relatively less costly to establish a park-and-ride facility than other transportation infrastructure improvements.

   c. *Social:* Moderate. Marketing required to increase usage (e.g., educate public on availability, convenience, benefits/cost savings).

   d. *Statutory/Regulatory:* Moderate / low. Likely requires legislative action to secure required funding. There may be existing policies that limit implementation (e.g., restrictions that limit connections between state-owned park-and-ride areas and adjoining properties).

5. Other Factors of Note: Implements recommendations from NH Department of Transportation 2003 study, *New Hampshire Statewide Intermodal Transportation Planning* Study, regarding recommending expansions and improvements of existing facilities as well as adding additional park-and-ride lots at new locations.

   One possible strategy is to develop a few larger, full-service facilities serving key travel markets (which can be expected to generate higher levels of usage and support high-frequency bus service), along with strategically-located (i.e., visible from a highway and/or co-located with other facilities, such as a train station) smaller facilities along most major travel corridors connecting NH's "economic centers."

   NHDOT 2003 identified four locations for park-and-rides outside the I-93 corridor that could potential support commuter bus service to Boston: Dover, Exeter, Merrimack, and Seabrook (although the three eastern locations would overlap in area served as well as compete with the existing facility at Portsmouth). Hampton is another potential location to add increased bus service (NHDOT communication).

   Inter-city bus service along the I-95 corridor in Coastal NH is currently constrained by a lack of sufficient capacity of current park-and-ride lots.

6. Level of Group Interest: High. The working group considered this an essential action to undertake in the near-term to achieve significant reductions in CO_2 emissions from the transportation and land use sector.

7. References:

- NHDOT, *NH Long Range Transportation Plan: A Framework for Transforming Transportation in New Hampshire,* Public Draft, May 1, 2008.
- NHDOT, Draft Final Bus Transit Needs and Benefits Analysis for Long-Range Transportation Plan – Technical Memo, 2008.
- NH Department of Transportation, NH Statewide Intermodal Transportation Planning Study, Final Report. December 2003.